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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/914,416	08/27/2001	Andrew John Varney	MARSP0124US	5399

7590

10/17/2003

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EXAMINER

DONOVAN, LINCOLN D

ART UNIT

PAPER NUMBER

2832

DATE MAILED: 10/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.  
**09/914,416**

Applicant(s)  
**Varney**

Examiner  
**Lincoln Donovan**

Art Unit  
**2832**



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on Jun 23, 2003
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some\* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). \_\_\_\_\_ 6) ☐ Other:

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## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamaguchi et al. [US 4,700,136] in view of Toyoda et al. [US 4,713,722].

Yamaguchi et al. disclose a NMR apparatus comprising:

- a main coil assembly [1] for producing a central magnetic field in a working volume [column 2, lines 53-63];
- main current supply means connected to the main coil for energizing/deenergizing the main coil assembly with a desired amount of constant current level has been reached [column 3, lines 1-15] to generate a central magnetic field of high homogeneity in the working volume;
- a shim coil assembly [2], wound about the same former assembly as the main winding, for providing adjustment of the central magnetic field and magnetically coupled thereto [column 3, lines 15-55];

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- auxiliary control means for the shim coil assembly for providing compensation and adjustment of the magnetic field within the working volume while maintaining the magnetic field within the volume [column 3, line 44-column 4, line 26].

Yamaguchi et al. disclose the instant claimed invention except for: the coils being superconductive.

Toyoda et al. discloses a compensation coil system for a superconducting magnet system.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a superconducting magnet for the magnet coil system of Yamaguchi et al., as suggested by Toyoda et al., for the purpose of improving the quality of the magnetic field.

Regarding claims 2-3 and 6-7, Toyoda et al. discloses the operation of the coils being time dependent.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to consideration time variations in the coil control of Yamaguchi et al., as suggested by Toyoda et al., in order to compensate for varying field strengths over time periods.

Toyoda et al. discloses the use of a heating element used with the windings.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a heater element in Yamaguchi et al., as modified, in order to control the superconductivity.

The specific winding directions and number of compensating coils used would have been an obvious design consideration based on the desired field strength and necessary adjustments.

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***Response to Arguments***

3. Applicant's arguments filed 06-23-03 have been fully considered but they are not persuasive.

Applicant argues that Yamaguchi et al. is directed to a non-superconducting magnet system and not applicable for use with superconducting magnets. Examiner disagrees. Both the system of Yamaguchi et al. and that of applicant are directed towards a magnet system and arrangement for directing a magnetic field within a region of interest. Both systems use magnets and shim coils to control and fine tune the system. Toyoda et al. disclose a control system for magnets and shims, similar in design and arrangement to that of applicant, to control a magnetic field within a cryogenic vessel. A skilled artisan desiring to achieve the beneficial results of a superconductive magnet system would have been motivated to use superconducting magnets with the related control system control system, as taught by Toyoda et al. in Yamaguchi et al. to improve the imaging quality.

It is noted that applicant seems to have intended to file additional claims 15-16. These claims were not included in the amendment filed 06-23-03.

***Conclusion***

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the

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THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

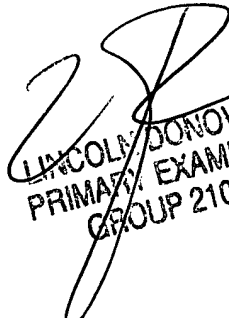
5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Lincoln Donovan whose telephone number is (703) 308-3111.

The fax number for this Group is (703)-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-1782.

LDD

October 16, 2003

  
LINCOLN DONOVAN  
PRIMARY EXAMINER  
GROUP 2100